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A new species of the subgenus *Simulium* (*Asiosimulium*) (Diptera: Simuliidae) from Thailand

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Abstract: *Simulium* (*Asiosimulium*) *wanchaii* sp. nov. is described based on females, collected from a human bait by a hand net in Doi Pui National Park, northern Thailand. This is the second species assigned to the subgenus *Simulium* (*Asiosimulium*), and is very similar to *S.* (*A.*) *oblongum* Takaoka and Choochote but is easily distinguished from the latter by the cercus 1.2 times as long as its basal width and the genital fork without an incision at the base of its arms.

Key words: black fly, Simuliidae, *Simulium*, Thailand, new species, *Asiosimulium*

Recently, we proposed a new subgenus, *Asiosimulium*, within the genus *Simulium* Latreille s. l. based on the single species, *S.* (*A.*) *oblongum* Takaoka and Choochote, from Thailand (Takaoka and Choochote, 2005). During our survey on adult black flies attracted to human baits in Doi Pui National Park, northern Thailand, we collected two female adults which are very similar to the female of *S.* (*A.*) *oblongum* except a few features including the length of the cercus of the genitalia. In this paper, they are described as a new species of the subgenus *Asiosimulium*.

The terms for morphological features used here follow those of Takaoka (2003). Holotype and paratype specimens of the new species are deposited at the Department of Infectious Disease Control, Oita University.

Simulium (*Asiosimulium*) *wanchaii* sp. nov.

DESCRIPTION. **Female**. Body length 3.0–3.1 mm. ***Head***. Slightly narrower than thorax. Frons brownish-black, thinly whitish-grey pruinose, not shiny, densely covered with yellowish-white hairs (except median longitudinal portion very narrowly bare and interantennal space also bare—Fig. 1A) interspersed with several dark longer and stouter hairs along each lateral margin; median suture on lower portion absent; frontal ratio 1.45 : 1.00 : 1.65–1.67. Frons-head ratio 1.0 : 4.3–4.6. Frontoocular area (Fig. 1A) well developed, triangular, directed laterally and somewhat upwards. Clypeus brownish-black, thickly whitish-grey pruinose, slightly shiny at certain angle of light, densely covered with yellowish-white hairs (except narrow portion near upper margin bare) intermixed with several dark longer and stouter hairs along lateral margins and near lower margin. Labrum 0.87 times as long as clypeus. Antenna composed of 2+9 segments, blackish-brown, except scape, pedicel, and basal 1/4 to 1/2 of 1st flagellar segment yellow; 1st flagellar segment 1.4 times as long as 2nd one. Maxillary palp (Fig. 1B) consisting of 5 segments, medium brown except 3rd segment blackish-brown, proportional lengths of 3rd, 4th, and 5th segments 1.0 : 0.9 : 1.5; 3rd segment somewhat enlarged; sensory vesicle (Fig. 1B) ellipsoidal, 0.31 times as long as 3rd segment, with large opening. Lacinia with 13 or 14 inner and 14 or 15 outer teeth. Mandible with 27–29 inner and 13 or 14 outer teeth.

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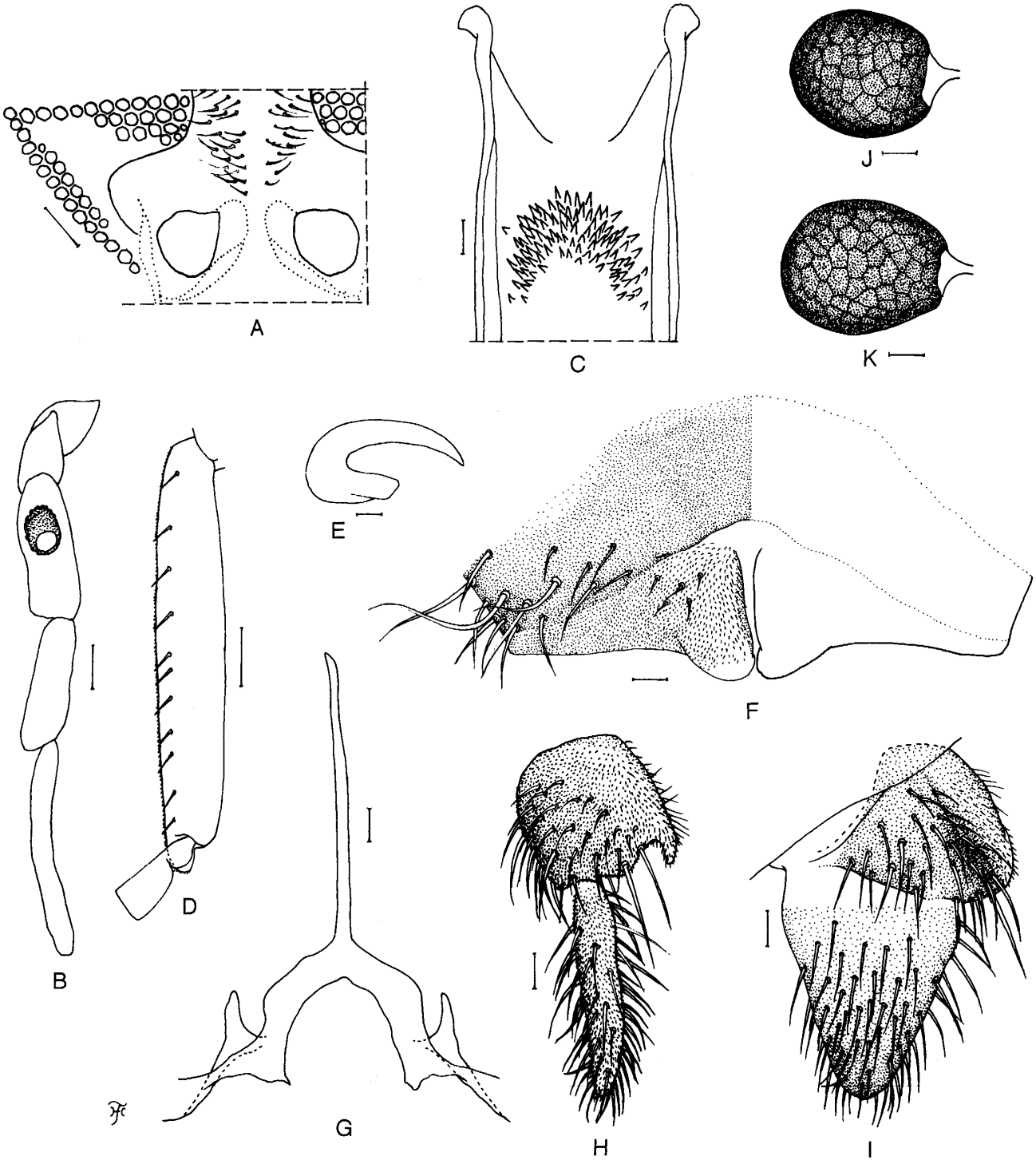

Fig. 1. Adult female of *Simulium* (*Asiosimulium*) *wanchaii* sp. nov. A, fronto-ocular area (right side) and lower portion of frons (frontal view); B, maxillary palp (left side, front view); C, upper portion of cibarium (front view); D, hind basitarsus and 2nd tarsal segment (left side, outer view); E, claw; F, 8th sternite and ovipositor valves *in situ* (ventral view); G, genital fork (ventral view); H and I, paraprocts and cerci (right side) (H, ventral view; I, outer view); J and K, spermathecae (lateral view). Scale bars. 0.1 mm for D; 0.05 mm for A and B; 0.02 mm for C and F–K; 0.01 mm for E.

Cibarium (Fig. 1C) deeply concave posterodorsally with median portion of margin indistinct, and with 96–102 spinous processes elaborately arranged on anterior surface somewhat apart from posterior margin. ***Thorax***. Scutum dark brown to brownish-black (except anterolateral calli light brown), with 3 faint black narrow longitudinal vittae (1 median, 2 sub-

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median), shiny at certain angle of light, and densely covered with yellowish-white short hairs mixed with several dark upright long hairs on prescutellar area. Scutellum dark brown, with many dark upright long hairs as well as yellowish-white short hairs. Postnotum dark brown, slightly shiny at certain angle of light, bare. Pleural membrane bare. Katepisternum longer than deep, dark brown, shiny in light and bare. Furcasternum with distinct ventrally-directed apodemes on internal dorsal arms. ***Legs***. All coxae, trochanters and femora light to medium brown except apical cap of femora and posterior surface of mid coxa dark brown; all tibiae and tarsi dark brown to black except extreme base of tibiae dark yellow. Fore basitarsus moderately dilated, 5.4–5.9 times as long as its greatest width, and with moderate dorsal hair crest. Hind basitarsus (Fig. 1D) very slightly widened from base to basal 1/2 or a little more, then somewhat narrowed toward apex, 5.8–6.3 times as long as its greatest width, 0.73–0.86 and 0.60–0.66 times as wide as greatest widths of tibia and femur, respectively; calcipala well developed, nearly as long as its width at base, and 0.37 times as wide as greatest width of basitarsus; pedisulcus well developed. All claws (Fig. 1E) with large basal tooth 0.47 times as long as claw. ***Wing***. Length 2.4 mm. Costa with 2 parallel rows of dark short spines as well as dark hairs. Subcosta with dark hairs except near apex bare. Hair tuft on stem vein dark. Basal portion of radius fully haired. R_1 with dark spinules and hairs. R_2 with dark hairs only. Basal cell and basal median cell absent. ***Abdomen***. Basal scale medium brown, with fringe of yellowish-white long hairs. Dorsal and lateral surfaces of abdomen medium to dark brown, moderately covered with dark short hairs mixed with yellowish-white short hairs on tergite 2 and on each lateral surface of segments 2–4; tergites 5–8 shiny at certain angle of light; ventral surface of abdomen yellowish-white on segment 2, dark greyish on segments 3–7 though gradually darkened posteriorly; segment 7 with medium-brown large sternal plate medially. ***Genitalia***. Sternite 8 (Fig. 1F) wide, bare medially but furnished with 14–21 short to long hairs on each side. Ovipositor valve (Fig. 1F) nearly triangular, thin, membranous except inner margin narrowly sclerotized, densely covered with microsetae (except narrow portion near posteromedial corner bare) interspersed with 4–6 short hairs; inner margins nearly straight, narrowly separated from each other basally but touching each other or slightly overlapped apically. Genital fork (Fig. 1G) inverted-Y-shaped, with well sclerotized stem and wide arms, and without incision between arms; each arm with a distinct projection directed anterodorsally on dorsal surface. Paraproct (Fig. 1H, I) of usual shape, moderately protruding ventrally, with numerous short and medium-long hairs on ventral and lateral surfaces, and with 7 colorless spinous sensilla on sclerotized anteromedial surface. Cercus in ventral view (Fig. 1H) elongate, about 1.3 times as long as paraproct, rounded outwardly, and with numerous short and medium-long hairs; cercus in lateral view (Fig. 1I) gradually narrowed posteriorly, with rounded apex, about 1.2 times as long as its width at base. Spermatheca (Fig. 1J, K) small, globular or ovoidal, strongly sclerotized except area around its juncture with duct unsclerotized, with distinct reticulate surface pattern, and with internal setae; accessory ducts subequal in diameter to each other and also subequal to main duct.

Male, **Pupa** and **Mature larva**. Unknown.

TYPE SPECIMENS. Holotype female, collected on a human bait by a hand net in the morning (between 0700 and 0800 hours), at Doi Pui National Park (1,420 m in altitude), Chiang Mai province, northern Thailand, 9.X.2005, by W. Choochote. Paratype: 1 female, same data as those of holotype except date, 8.X.2005.

DISTRIBUTION. Thailand.

ETYMOLOGY. The specific name *wanchaii* is in honor of Prof. Wanchai Maleewong, Department of Parasitology, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand, for his kind help as a guide in collections of black flies in northeastern Thailand.

REMARKS. *Simulium* (*Asiosimulium*) *wanchaii* sp. nov. is very similar to *S.* (*A.*) *oblongum* but is distinguished from the latter species by the following characteristics (those of *S.* (*A.*) *oblongum* in paren-

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theses): hairs between antennal sockets absent (present), the third maxillary palpal segment slightly longer than the fourth one (subequal in length), the claw tooth 0.47 times as long as the claw (0.55 times), an incision at the base of genital arms absent (present), and the cercus about 1.2 times as long as wide (about twofold).

Acknowledgement

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